

# ***Appendix K***

## ***Environmental Regulations, Standards, and Orders***

**Table K-1**  
**Department of Energy Radiation Protection Standards**  
**and Derived Concentration Guides <sup>1</sup>**

*Effective Dose Equivalent Radiation Standard for Protection of the Public*

*Continuous exposure of any member of the public from routine activities:  
All exposure pathways = 100 mrem/year (1 mSv/yr) effective dose equivalent*

**Department of Energy Derived Concentration Guides (DCGs) for  
Inhaled Air or Ingested Water (μCi/mL)**

<i>Radionuclide</i>	<i>Half-life <sup>2, 3</sup> (years)</i>	<i>In Air</i>	<i>In Water</i>	<i>Radionuclide</i>	<i>Half-life <sup>2, 3</sup> (years)</i>	<i>In Air</i>	<i>In Water</i>
<b>H-3*</b>	1.23E+ 01	1E-07	2E-03	<b>Eu-152</b>	1.36E+ 01	5E-11	2E-05
<b>C-14*</b>	5.73E+ 03	6E-09	7E-05	<b>Eu-154*</b>	8.80E+ 00	5E-11	2E-05
<b>K-40</b>	1.28E+ 09	9E-10	7E-06	<b>Eu-155</b>	4.96E+ 00	3E-10	1E-04
<b>Fe-55</b>	2.70E+ 00	5E-09	2E-04	<b>Th-232</b>	1.40E+ 10	7E-15	5E-08
<b>Co-60*</b>	5.27E+ 00	8E-11	5E-06	<b>U-232*</b>	7.20E+ 01	2E-14	1E-07
<b>Ni-59</b>	7.50E+ 04	4E-09	7E-04	<b>U-233*</b>	1.59E+ 05	9E-14	5E-07
<b>Ni-63</b>	1.00E+ 02	2E-09	3E-04	<b>U-234*</b>	2.44E+ 05	9E-14	5E-07
<b>Sr-90*</b>	2.86E+ 01	9E-12	1E-06	<b>U-235*</b>	7.04E+ 08	1E-13	6E-07
<b>Y-90</b>	7.31E-03	1E-09	1E-05	<b>U-236*</b>	2.34E+ 07	1E-13	5E-07
<b>Zr-93</b>	1.53E+ 06	4E-11	9E-05	<b>U-238*</b>	4.47E+ 09	1E-13	6E-07
<b>Nb-93m</b>	1.46E+ 01	4E-10	3E-04	<b>Np-239</b>	6.45E-03	5E-09	5E-05
<b>Tc-99*</b>	2.13E+ 05	2E-09	1E-04	<b>Pu-238*</b>	8.78E+ 01	3E-14	4E-08
<b>Ru-106</b>	1.01E+ 00	3E-11	6E-06	<b>Pu-239*</b>	2.41E+ 04	2E-14	3E-08
<b>Cd-113m</b>	1.37E+ 01	8E-12	9E-07	<b>Pu-240*</b>	6.57E+ 03	2E-14	3E-08
<b>Sn-126</b>	1.00E+ 05	1E-10	8E-06	<b>Pu-241</b>	1.44E+ 01	1E-12	2E-06
<b>Sb-125</b>	2.77E+ 00	1E-09	5E-05	<b>Am-241*</b>	4.32E+ 02	2E-14	3E-08
<b>Te-125m</b>	1.59E-01	2E-09	4E-05	<b>Am-242m</b>	1.52E+ 02	2E-14	3E-08
<b>I-129*</b>	1.57E+ 07	7E-11	5E-07	<b>Am-243</b>	7.38E+ 03	2E-14	3E-08
<b>Cs-134*</b>	2.06E+ 00	2E-10	2E-06	<b>Cm-243</b>	2.85E+ 01	3E-14	5E-08
<b>Cs-135</b>	2.30E+ 06	3E-09	2E-05	<b>Cm-244</b>	1.81E+ 01	4E-14	6E-08
<b>Cs-137*</b>	3.02E+ 01	4E-10	3E-06	<b>Gross Alpha</b>	NA	2E-14	3E-08
<b>Pm-147</b>	2.62E+ 00	3E-10	1E-04	<b>(as Am-241)</b>			
<b>Sm-151</b>	9.00E+ 01	4E-10	4E-04	<b>Gross Beta</b>	NA	9E-12	1E-06
				<b>(as Sr-90)</b>			

<sup>1</sup> DOE Order 5400.5 (February 8, 1990). Effective May 8, 1990. (See Derived Concentration Guides, p. 1-5, in Chapter 1, Environmental Program Information.)

<sup>2</sup> U.S. Department of Energy. 1981. Radioactive Decay Tables. Washington, D.C.: Technical Information Center, U.S. Department of Energy.

<sup>3</sup> Shleien, B. et al. 1998. Handbook of Health Physics and Radiological Health Safety. 3rd ed. Baltimore, Maryland: Williams & Wilkins.

\* Radionuclides measured in WVDP effluent.

NA - Not applicable.

## **Table K-2**

### ***Environmental Regulations, Orders, and Standards***

*The following environmental standards and laws are applicable, in whole or in part, to the West Valley Demonstration Project.*

*Atomic Energy Act of 1954, 42 USC §2011 et seq.*

*Clean Air Act (CAA). Pub. L. No. 84-159. 42 USC §7401 et seq., as amended, and implementing regulations.*

*Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). Pub. L. No. 96-510. 42 USC §9601 et seq. (including Superfund Amendments and Reauthorization Act of 1986), and implementing regulations.*

*DOE Order 231.1. September 30, 1995. Environment, Safety, and Health Reporting, including Change 2 (November 7, 1996).*

*DOE Order 232.1A. August 1, 1997. Occurrence Reporting and Processing of Operations Information.*

*DOE Order 414.1A. September 29, 1999. Quality Assurance.*

*DOE Order 451.1B. October 26, 2000. National Environmental Policy Act Compliance Program.*

*DOE Order 5400.1. November 9, 1988. General Environmental Protection Program, including Change 1 (June 29, 1990).*

*DOE Order 5400.5. February 8, 1990. Radiation Protection of the Public and the Environment, including Change 2 (January 7, 1993).*

*DOE Order 5480.4. May 15, 1984. Environmental Protection, Safety, and Health Protection Standards, including Change 4 (January 7, 1993).*

*DOE Regulatory Guide DOE/EH-0173T, January 1991. Environmental Regulatory Guide for Radiological Effluent Monitoring and Environmental Surveillance.*

*Emergency Planning and Community Right-to-Know Act (EPCRA) of 1986. Pub. L. No. 99-499. 42 USC §11001 et seq., and implementing regulations.*

*Endangered Species Act. Pub. L. No. 93-205. 16 USC §1531-1544.*

***Table K-2 (concluded)***  
***Environmental Regulations, Orders, and Standards***

*Environmental Conservation Law of New York State* and implementing regulations (NYCRR).

Executive Orders 11988 and 11990. *Floodplains-Wetland Environmental Review Requirements*. 10 CFR 10222.

Executive Order 12856. Federal Compliance with Right-to-Know Laws and Pollution Prevention Requirements.

Executive Order 13101. Greening the Government Through Waste Prevention, Recycling, and Federal Acquisition.

Executive Order 13148. Greening the Government Through Leadership in Environmental Management.

*Federal Water Pollution Control Act [Clean Water Act (CWA)]*. Pub. L. No. 95-217. 33 USC §1251 *et seq.*, as amended, and implementing regulations.

*Resource Conservation and Recovery Act (RCRA)*. Pub. L. No. 94-580. 42 USC §6901 *et seq.*, as amended, and implementing regulations.

*National Environmental Policy Act (NEPA)* of 1969. Pub. L. No. 91-190. 42 USC §4321 *et seq.*, as amended, and implementing regulations.

*National Historic Preservation Act of 1966*. Pub. L. No. 102-575. 16 USC §470.

*Toxic Substances Control Act (TSCA)*. Pub. L. No. 94-469. 15 USC §2601 *et seq.*, as amended, and implementing regulations.

*Safe Drinking Water Act (SDWA)*. Pub. L. No. 93-523. 42 USC §300f *et seq.*, as amended, and implementing regulations.

Water quality standards contained in the State Pollutant Discharge Elimination System (SPDES) permit issued for the facility are listed in Table G-1. Airborne emissions are regulated by the Environmental Protection Agency under the National Emission Standards for Hazardous Air Pollutants (NESHAP), 40 CFR §61 Subpart H (December 15, 1989).

*The above list covers the major activities at the West Valley Demonstration Project but does not constitute a complete enumeration.*